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(52) Cosmetic composition.

(57) A skin cleansing composition suitable for removing make up contains an oil which is an ester, an ethoxylated nonionic emulsifier and water, together with an aerosol propellant to deliver the composition as a mousse.

The emulsifier must have an average HLB of 5 to 14, an alkyl or alkaryl moiety with 9 to 15 carbon atoms, and 2 to 10 ethylene oxide units.

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COSMETIC COMPOSITION**FIELD OF THE INVENTION**

The invention relates to a cleansing composition suitable for topical application to human skin, more particularly to a propellant-driven cleansing mousse composition for removal of make-up from the skin.

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BACKGROUND AND PRIOR ART

The topical application to human skin, in particular to the face, has since time immemorial been and still is, an art form employed particularly by women, as part of a daily or periodic ritual or routine to embellish or beautify their appearance in the eyes of the beholder and/or to enhance confidence, to enable them more readily to face each day. Topical application of make-up, particularly to exposed areas of the skin, can also provide some protection from the elements, such as the sun, the wind and the rain, where otherwise the skin damage or accelerated skin ageing can occur.

Make-up, once applied to the skin, has conventionally only a limited life, and must be removed from time to time and replenished anew. To habitual make-up users, this is a daily or twice daily activity.

The removal of make-up, particularly waxed based make-up such as lipstick and mascara, presents a special problem in that it can adhere strongly to the skin and can resist ordinary washing with soap and water, or with mild detergent products especially formulated for use on delicate skin areas, such as the face. Scrubbing of the skin to remove make-up can be successful, but damage to the underlying sensitive skin can result.

Oil-based cleansing products such as 'cold cream' have been recommended for cleaning make-up from the skin, but the resultant oil residue consisting of a mixture of solubilised make-up and excess cleanser is difficult to remove either by wiping off or by rinsing with water.

Mousses delivered from a pressurised container offer a useful alternative cleansing product in that they are convenient to apply and are generally easy to remove after use.

One such product currently available on the UK market is Johnsons Baby Oil Mousse, which is marketed primarily as a moisturising product, but which can be used with only moderate success to remove lipstick. This product is described in EP 0 307 086, and is stated to contain mineral oil, a C₁₆₋₁₈ fatty alcohol ethoxylate, having an HLB value of less than 10 as well as propellant and water.

A mild, skin-cleansing, non-foaming mousse-forming emulsion is described by Procter & Gamble in EP 0 213 827. The mousse comprises a nonionic surfactant, such as an ethoxylated nonionic surfactant or a partially esterified polyol, an emollient such as a mineral oil or vegetable oil, a moisturiser such as glycerin or sorbitol and a water soluble gaseous propellant such as carbon dioxide and nitrogen. The composition is preferably substantially free from water-insoluble propellants such as hydrocarbons. The composition which is exemplified contains minor amounts of esters.

SUMMARY OF THE INVENTION

Attempts to employ Johnsons Baby Oil Mousse, as well as other body moisturising cleansing products such as 'cold cream', in the removal of tenacious make-up, have met with only partial success, and accordingly, there remains a problem of complete removal of make-up without resort to solvents or physical abrasion that might cause damage to the skin.

We have now discovered that by use of an oil which is an ester together with a nonionic emulsifier and water, the emulsion being pressurised with a water insoluble propellant, a mousse-generating emulsion is obtained which has excellent make-up removal properties, and can be easily removed from the skin by wiping or by rinsing with water.

DEFINITION OF THE INVENTION

Accordingly, the invention provides a cleansing composition suitable for topical application to human skin to remove make-up, the composition comprising:

- a. from 90 to 99.5% by weight of a concentrate comprising
 - i. from 10 to 40% by weight of an oil having at least one ester group, in which the alkanoate moiety has from 8 to 22 carbon atoms;
 - ii. from 2 to 20% by weight of a nonionic emulsifier having an average HLB value of from 5 to 14, said

- emulsifier comprising an alkyl or alkaryl moiety having from 9 to 15 carbon atoms and from 2 to 10 ethylene oxide units; and
 iii. the balance water; and
 b. from 2 to 10 % by weight of a propellant.

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DISCLOSURE OF THE INVENTION

The cleansing composition according to the invention comprises a concentrate, including at least a special oil, a special emulsifier and water, and a propellant which is filled together with the concentrate into a pressurised container to provide the cleansing composition of the invention, which can then be dispensed as a mousse.

The Ester Oil

15 The cleansing composition according to the invention comprises an oil having at least one ester group, in which the alcanoate moiety has from 8 to 22 carbon atoms.

By "oil" we mean a cosmetically acceptable substantially water-immiscible liquid.

The oil may in particular be a triglyceride oil and furthermore may preferably have branched chain alcanoate moieties.

20 Examples of oils for use in the composition according to the invention include:
 saturated or unsaturated, straight or branched chain C₈–22 alkane esters, for example isopropylmyristate (e.g. ESTOL 1514, ex Unichema)
 hexyl laurate (e.g. CETIOL A, ex Henkel)
 methyl laurate (e.g. ESTOL 1502, ex Unichema)

25 2-ethylhexyl palmitate (e.g. GLYCO 0-3000, ex Glyco)
 2-octyldodecyl myristate (e.g. MOD, ex Nippon Oils & Fats)
 propyleneglycol dicaprylate/caprate (e.g. ESTOL 1526, ex Unichema)
 isopropylpalmitate (e.g. ESTOL 1517, ex Unichema)
 decyloleate (e.g. CETIOL V, ex Henkel)

30 triglycerides such as
 glyceryl tri-caprylate/caprate (e.g. ESTOL 1527, ex Unichema)
 glyceryl tri-isostearate (e.g. PRISORINE, ex Unichema)
 glyceryl tri(2-ethylhexanoate) (e.g. MYRITOL GTEH, ex Henkel).

The amount of oil present in the composition of the invention is from 10 to 40%, preferably 20 to 35% by weight.

Compositions containing less than 10% by weight of oil tend to be poor at removing make-up from human skin, while those containing more than 40% by weight of the oil can leave the skin in a greasy state after use and their efficacy at removing make-up is not further enhanced.

40 The Nonionic Emulsifier

The cleansing composition according to the invention also comprises a nonionic emulsifier having an average HLB value of from 5 to 14, said emulsifier comprising an alkyl or alkaryl moiety having from 9 to 15 carbon atoms and from 2 to 10 ethylene oxide units.

45 Preferably, the nonionic emulsifier had an average HLB value of from 10 to 14.

Examples of nonionic emulsifiers include:

Laureth 2 (e.g. EMPILAN KB2, ex Albright & Wilson)
 Laureth 7 (e.g. MARLIPAL MG, ex Huls)
 PEG 8 laurate (e.g. CLITHROL 4ML, ex Croda)
 50 Pareth 25.7 (e.g. SYNPERONIC A7, ex ICI)
 Pareth 91-6 (e.g. SYNPERONIC 91/6, ex ICI)
 Nonoxynol 7 (e.g. SYNPERONIC NP7, ex ICI)

The amount of nonionic emulsifier present in the composition of the invention is from 2 to 20% by weight.

55 The amount of ester oil will, in many compositions of this invention, be greater than the quantity of the emulsifier and also greater than the quantity of all surfactants present, including the emulsifier. The quantity of emulsifier may lie in a range from 2 to 10% by weight.

Water

The cleansing composition according to the invention also comprises water. This may be present in an amount from 20% to 86% preferably from 50 to 86% by weight, yet more preferably 50 to 70% by weight.

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The Propellant

The cleansing composition according to the invention also comprises a substantially water-insoluble propellant.

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Examples of suitable propellants include:

propane,
iso-butane,
n-butane,
mixtures of these three propellants, such as CAP 30 (ex Calor)

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dimethylether,
hydrofluorocarbon, such as HFA 152a and 134a,
chlorofluorocarbons, such as Propellants 11, 12, 114 and 22.

Mixtures of water-insoluble propellants can also be used.

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The amount of propellant present in the composition of the invention is from 2 to 10%, preferably from 3 to 6% by weight.

OTHER INGREDIENTSHydrocarbon oil

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The cleansing composition according to the invention can also optionally comprise a hydrocarbon oil as a supplement to the oil having at least one ester group, which is an essential ingredient of the composition of the invention. The presence of a hydrocarbon oil can, accordingly, further enhance the cleansing properties of the cleansing composition.

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Examples of mineral oils, when present, include:
technical white oil (e.g. SIRIUS M85, ex Dalton)
technical white oil (e.g. RUDOL, ex Witco)
iso-paraffin (e.g. ISOPAR L, ex Exxon)
polybutane (e.g. POLYSYNNLANE, ex Nippon Oil & Fat)

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The amount of hydrocarbon oil when present in the composition of the invention is usually up to 30%, preferably from 5 to 20% by weight of the composition.

Cosmetic adjuncts

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The composition according to the invention can optionally comprise cosmetic adjuncts, examples of which are:

preservatives, such as:
p-hydroxybenzoate esters
2-bromo-2-nitropropane-1, 3-diol

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salicylic acid

antioxidants, such as:
butylated hydroxy toluene
butylated hydroxy anisole
tocopherol

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skin conditioners, such as

Polyquaternium 10
PEG-7 glyceryl cocoate
emulsion stabilisers (co-emulsifiers), such as:
cetyl alcohol
glyceryl mono/distearate
stearic acid
humectants, such as:
glycerol

- propylene glycol
 - dipropylene glycol
 - sorbitol
 - 2-pyrrolidone-5-carboxylate
 - 5 polyethyleneglycol (e.g. PEG 200-600)
 - thickeners, such as
 - carborers
 - xanthan gum
 - hectorite
 - 10 fumed silica
 - plant extracts, such as
 - Aloe vera
 - cornflower
 - witch hazel
 - 15 elderflower
 - cucumber
 - germicides, such as
 - triclosan
 - cetrimide
 - 20 colourants and perfumes.
- Cosmetic adjuncts can form up to 50% by weight of the composition and can conveniently form the balance of the composition.

Process for preparing the composition

25 The invention also provides a process for the preparation of a cleansing composition for topical application to skin which comprises the step of incorporating into the composition an oil having at least one ester group, a nonionic emulsifier and water, to form a concentrate which is then filled into pressurised containers together with a substantially water-insoluble propellant.

30 Use of the composition

The emulsion according to the invention is intended primarily as a product for topical application to cleanse human skin, particularly to remove make-up from the face and other parts of the body.

35 In use, a small quantity of the composition, for example from 1 to 5 ml, is delivered as a mousse from an aerosol dispenser and then applied to the affected area of skin. If necessary, the mousse is then spread over and/or rubbed onto the skin using the hand or fingers or a suitable device, in order to effect a cleansing action.

The emulsified residue can then be removed by wiping off with a tissue or by rinsing with water.

40 PRODUCT FORM AND PACKAGING

The topical skin cleansing composition of the invention can be formulated as a liquid having a viscosity usually of from 10 to 2,000 mPas, as measured with a Brookfield RVT viscometer using spindle 3 at 25 °C.

45 The composition can be packaged in a suitable pressurised container, from which it can be dispensed as a mousse.

The invention accordingly also provides a closed container containing the cosmetically acceptable cleansing composition as herein defined, the container being a pressurised container fitted with a closure incorporating a valve and actuator suitable for dispensing a mousse.

50 Evidence to demonstrate ability of the composition in removing make-up from skin

The Subjective Lipstick Removal Test

55 The subjective test was performed by human volunteers, to whose forearms was applied a lipstick mark in the shape of a 'cross'. An attempt was then made to remove the 'cross' by following a standard cleansing procedure using a variety of compositions, some in accordance with the invention and some outside the monopoly claimed.

Materials

The lipstick chosen for this test was Cutex Lip Moist 040.
 The cleansing products had the following formulation:

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	<u>Ingredients (concentrate)</u>	<u>% w/v</u>
10	ester oil	24
	emulsifier	6
15	water	70

The concentrate was filled into aerosol cans and pressurised with CAP 30 to a level of 5% by weight of the emulsion.

20 Method

A lipstick mark, in the shape of a cross (3cm by 3cm) was applied to the left forearm of each right handed volunteer (or vice versa if left handed).

25 A 2cm diameter dose of mousse expelled from the aerosol can was applied directly to the lipstick cross and rubbed in for 10 seconds.

The arm was finally rinsed in luke-warm water and removal of the lipstick estimated subjectively as follows:

- 0 none removed
- 1 poor removal
- 30 2 satisfactory removal
- 3 complete removal

Results

35 The results of a series of cleansing tests are set out in the following table.

For each emulsifier the CTFA name is stated, together with the HLB value and the chain length i.e. the number of carbon atoms in the alkyl group of the emulsifier.

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<u>Expt Oil</u>	<u>Emulsifier</u>	<u>HLB of</u>	<u>Chain</u>	<u>Removal</u>
<u>No.</u>	<u>(CTFA name)</u>	<u>Emulsifier</u>	<u>Length</u>	<u>Score</u>
5 1 GTEH	Laureth 2	7.0	12	2
10 2 GTEH	Laureth 7	13.0	12	3
15 3 GTEH	Laureth 4	9.7	12	2
20 4 GTEH	3:1 Laureth 2 : Laureth 23		12	2
25 5 GTEH	Steareth 2	4.0	18	1
30 6 GTEH	Oleth 2	4.9	18	1
35 7 GTEH	Oleth 5	8.8	18	1
40 8 GTEH	PEG 4/laurate	4.8	12	1

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9	GTEH	PEG 8 laurate	13.1	12	3
10	GTEH	Pareth 23.2	6.5	12-13	2
5	11 GTEH	Pareth 25.2	5.9	12-15	2
12 GTEH	Pareth 25.3	7.8	12-15	2	
13 GTEH	Pareth 25-7	12.2	12-15	3	
10	14 GTEH	Pareth 91-2.5	8.2	9-11	2
15	15 GTEH	Pareth 91-4	10.8	9-11	2
16 GTEH	Pareth 91-6	11.8	9-11	3	
17 GTEH	Pareth 91-12	15.3	9-11	1	
20	18 GTEH	Pareth 91-20	16.9	9-11	1
19 GTEH:MO#1*	Laureth 2	7.0	12	3	
20 GTEH:MO#2*	Laureth 2	7.0	12	3	
25	21 GTEH:MO#2*	PEG4 laurate	4.8	12	2
22 IPM	Laureth 7	13.0	12	3	
23 IPM	PEG 8 Laurate	13.1	12	3	
30	24 IPM	Laureth 2	ca 7	12	2
25 DO	Laureth 2	ca 7	12	2	
35	26 DO	Laureth 7	ca 13	12	3
27 DO	PEG 8 Laurate	12.1	12	3	

40 Note that: GTEH is glyceryl tri-(2-ethylhexanoate)
 MO#1 is mineral oil 85 SUS
 MO#2 is mineral oil 350 SUS
 IPM is iso-propyl myristate
 DO is decyl oleate
 *weight ratio of 1:1

Ingredient Sources5 Oils

10	Glyceryl tri-	
	(2 ethylhexanoate)	Myritol GTEH ex Henkel (Japan)
	Mineral Oil 85 SUS	Sirius M85 ex Dalton
15	Mineral Oil 350 SUS	Sirius M350 ex Dalton
	Isopropyl Myristate	Estol 1514 ex Unichema
	Decyl Oleate	Cetiol V ex Henkel
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Emulsifiers

25	Laureth 2	Empilan KB2 ex Albright & Wilson
	Laureth 7	Marlipal MG ex Huls
30	Laureth 4	Brij 30 ex Atlas/ICI
	Laureth 23	Brij 35 ex Atlas/ICI
35	Stearate 2	Brij 72 ex Atlas/ICI
	Oleth 2	Brij 92 ex Atlas/ICI
	Oleth 5	Volpo N5 ex Croda
40	PEG 4 laurate	Clithrol 2ML ex Croda
	PEG 8 laurate	Clithrol 4ML ex Croda
45	Pareth 23.2	Dobanol 23 EO ex Shell
	Pareth 25.2	Synperonic A2 ex ICI
	Pareth 25.3	Synperonic A3 ex ICI
50	Pareth 25.7	Synperonic A7 ex ICI
	Pareth 91-2.5	Synperonic 91/2.5 ex ICI
55	Pareth 91-4	Synperonic 91/4 ex ICI

5	Pareth 91-6	Synperonic 91/6 ex ICI
	Pareth 91-12	Synperonic 91/12 ex ICI
	Pareth 91-20	Synperonic 91/20 ex ICI

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Conclusions

- 15 From these results, it is apparent that the most effective formulations for removing lipstick, in accordance with the Lipstick Removal Test are:
- i. those that contain an emulsifier having an average HLB value of between about 12 and 13, (i.e. Experiments 2, 9, 13, 16, 20, 22, 26 and 27) and
 - ii. those that contain added hydrocarbon oil and an emulsifier having an average HLB value below 12 (i.e. 20 Experiment 19).
- It is also apparent that those formulations which are moderately effective in removing lipstick in accordance with this Test are:
- i. those that contain an emulsifier having an average HLB value of between about 5 to 10, (i.e. Experiments 1, 3, 4, 10, 11, 12, 14, 15, 20, 24 and 25).
- 25 It is also apparent that those formulations which are poor in removing lipstick in accordance with this Test are:
- i. those that contain an emulsifier having an average HLB value of below 5 (i.e. Experiments 5, 6 and 8); and
 - ii. those that contain an emulsifier having an average HLB value of above 14 (i.e. Experiments 12 and 30 18),
 - iii. those that contained an emulsifier having an average HLB value of greater than 5, but with an alkyl chain greater than C₁₅ (i.e. Experiment 7).
- Overall, a preference can be seen for those formulations which
- a. contain an emulsifier having an average HLB value of between 12 and 13; and
 - b. contain a hydrocarbon oil as a supplement to but not a replacement for an ester oil.

Examples

The Invention is further illustrated by the following examples, which illustrate cleansing compositions according to the invention.

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Example 1

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	<u>Ingredients</u>	<u>% w/w</u>
10	Glyceryl tri(2-ethylhexanoate)	23
Laureth 7		6
15	Water	64
CAP 30		5
15	Glycerol	2
20	Minor ingredients, including preservative and perfume	q.s.

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Example 2

30	Isopropyl myristate	30
PEG 8 laurate		8
35	Glycerol	2
Water		50
CAP 30		10
40	Minor ingredients	q.v.

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Example 3

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	Decyl oleate	12
10	Technical white oil	12
	Laureth 2	6
	Dipropylene glycol	3
15	Dimethyl ether	5
	Water	62

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Example 4

25	Glyceryl tri-isostearate	20
	Polybutene	4
30	Glycerol	3
	CAP 30	4
	Dimethyl ether	4
35	Water	58
	Pareth 91-6	7

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Example 5

45	Propylene glycol di-caprylate/caprate	23
	Pareth 25-7	8
50	Propylene glycol	2
	CAP 30	6
	Water	61

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Example 6

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	Glyceryl tri(2-ethylhexanoate)	34.0
10	Laureth 7	6.0
	Cetearyl alcohol	3.0
15	Glycerol	2.0
	CAP 30	5.0
	Water - 50.0
20	Minor ingredients	q.v.

Example 7

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	Glyceryl tri(2-ethylhexanoate)	12.0
30	Technical white oil	12.0
	Xanthan gum	0.5
	Laureth 7	6.0
35	Glycerol	2.0
	CAP 30	5.0
40	Water	62.5
	Minor ingredients	q.v.

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Quantitative Testing

The compositions of some of the foregoing examples, and some other cleansers, were tested by the following test which assesses removal of lipstick from a panellist's forearm.

- 50 The lipstick chosen for this test was Rimmel Truly Red Lipstick.
 An area of approximately 3cm by 5cm on the panellists forearm was wiped with alcohol.
 The reflectance of the clean skin (R_s) was measured using a Minolta chromameter CR100.
 Approximately 0.2g of the lipstick was applied to the clean area of skin and the reflectance (R_L) measured.
 55 1 gram of the cleansing composition was applied to the test area, rubbed over the area for 20 seconds, and removed by rinsing with water (37 °C) or wiping with tissue as appropriate for the cleansing composition concerned. Reflectance (R_F) of the skin area was measured.
 Percentage lipstick removed was expressed as

$$100 - \frac{(R_F - R_S)}{(R_L - R_S)} \times 100\%$$

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The test was carried out with six panellists for each composition. The results were averaged and are set out in the following table.

	<u>Cleansing Composition</u>	<u>Average %</u>
		<u>Lipstick Removal</u>
10	Pond's Cold Cream	77
15	Nivea Cleansing Milk	63
20	Johnsons Baby Oil Mousse	77
25	Example 1	91
30	Example 3	92
35	Example 4	91
40	Example 5	96
45	Example 6	92
50	Example 7	84

The advantage achieved with compositions according to this invention is plain to see.

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Claims

1. A cleansing composition suitable for topical application to human skin to remove make-up, the composition comprising
 - a. from 90 to 99.5% by weight of a concentrate comprising
 - i. from 10 to 40% by weight of an oil having at least one ester group, in which the alkanoate moiety has from 8 to 22 carbon atoms;
 - ii. from 2 to 20% by weight of a nonionic emulsifier having an average HLB value of from 5 to 14, said emulsifier comprising an alkyl or alkaryl moiety having from 9 to 15 carbon atoms, and from 2 to 10 ethylene oxide units;
 - iii. water; and
 - b. from 2 to 10% by weight of a propellant.
2. A composition according to claim 1, in which the oil is a triglyceride oil.
3. A composition according to claim 2, in which the triglyceride oil comprises one or more branched chain ester groups.
4. A composition according to claim 3, in which the triglyceride oil is glyceryl tri(2-ethylhexanoate).
5. A composition according to claim 1, in which the oil is isopropyl myristate.
6. A composition according to claim 1, in which the oil is decyl oleate.

7. A composition according to any preceding claim, in which the emulsifier has an HLB value of from 12 to 14.

8. A composition according to any preceding claim, in which the emulsifier is chosen from:

5 Laureth 2

Laureth 7

PEG 8 laurate

Pareth 25.7

Pareth 91-6, and

10 Nonoxynol 7.

9. A composition according to any preceding claim, which further comprises a hydrocarbon oil.

10. A composition according to any preceding claim, in which the propellant is CAP 30.

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11. A composition according to any preceding claim, which comprises

a. from 85 to 95% by weight of a concentrate comprising:

i. from 15 to 30% by weight of glyceryl tri(2-ethylhexanoate);

ii. from 2 to 10% by weight of Laureth 7, having an average HLB value of from 12.5 to 13.5; and

20 iii. from 20 to 70% by weight of water; and

b. from 3 to 10% by weight of CAP 30.

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EUROPEAN SEARCH
REPORT

EP 90 31 3908

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)		
D,Y	EP-A-0 213 827 (PROCTER & GAMBLE) * Claims; example * - - -	1-11	A 61 K 7/50		
D,Y	EP-A-0 307 086 (JOHNSON & JOHNSON) * Claims; page 3, lines 10-56; examples * - - -	1-11			
A	EP-A-0 257 336 (MERZ & CO.) * Claims; page 1, lines 1-46; examples 2a,3 * - - -	1-11			
A	FR-A-1 501 837 (REVLON) * Example 2; abstract * - - - - -	1-11			
The present search report has been drawn up for all claims			TECHNICAL FIELDS SEARCHED (Int. Cl.5)		
			A 61 K		
Place of search	Date of completion of search	Examiner			
The Hague	11 April 91	WILLEKENS G.E.J.			
CATEGORY OF CITED DOCUMENTS					
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